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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,987	02/08/2002	Akira Takekuma	40004101-02	2039

7590

10/23/2003

Paul D. Greeley, Esq.
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.
10th Floor
One Landmark Square
Stamford, CT 06901-2682

EXAMINER

DOLAN, JENNIFER M

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/071,987

Applicant(s)

TAKEKUMA, AKIRA

Examiner

Jennifer M. Dolan

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-17 is/are rejected.
- 7) ☒ Claim(s) 4 and 5 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6, 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the element that monitors light emission and the element that monitors heat generation must be shown or the features canceled from the claims. No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 10 and 14 –16 are objected to because of the following informalities:

In line 2 of claim 10, --of—should be added after “portion”.

In line 6 of claim 14, --on—should be added after “chip”.

In line 3 of claim 15 and lines 3 and 4 of claim 16, “parts” should be replaced by – components--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 2813

4. Claims 7 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. It is unclear from the specification exactly which parts or components in the specification and the drawings correspond with the claimed “lead-linking component” of claim 7 and the “holding linking component” in claim 11, since the specific claim language for these parts is not used in the specification. For the purpose of examination, it is assumed that the “lead-linking component” is any component on the cup that is connected to the leads, and that the “holding linking component” is any component on the cup that links to a circuit board or something similar.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 6-11, and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication No. 06-090029 to Itou et al. (cited by applicant).

Regarding claims 1, 6, 9, 14, and 17, Itou discloses a light emitting diode (figure 1) comprising: a cup component (11 and 12); a plurality of electrical conducting traces (11a, 12a

Art Unit: 2813

metallic layers) formed on a surface of the insulating cup (figures 1 and 2; paragraph 0007) using an MID means (since the cup is formed of 3-dimensional molded resin (see paragraph 0007) with conductive traces printed on the exterior (see figures 1 and 2), it is considered to have an MID construction); a LED chip (13) mounted on the bottom of the cup (figure 1) and electrically connected to first and second traces (figure 1); and a first connection part (11c and 12c) connected to the traces for providing electrical connections to external circuitry (paragraphs 0009, 0012, and 0013; it is implicit that since 11c, 11d, 12c, and 12d form a 'leadframe,' they clearly connect to external circuitry. Additionally, the LED would not be functional without connection to some sort of driving circuitry through the leads).

Regarding claim 7, Itou discloses lead-linking components (portions of metallic layer connecting 11a to 11c and 12a to 12c) that link to the first and second leads (figure 1).

Regarding claim 8, Itou discloses an extension component (top portions of 17 in figure 4b) extending to the vicinity of the LED chip (figure 4b).

Regarding claim 10, Itou discloses that the first connection part (11c, 12c) is of unitary construction with the first and second traces (portion of the metal layer at 11a and 12a), and thus comprises a portion of the traces.

Regarding claim 11, Itou discloses projecting leads (figure 1), which link to an object on which the LED is held.

Regarding claim 15, Itou discloses that the secondary assembly is connected to a lead component (figures 1 and 4; paragraphs 0009-0013).

Regarding claim 16, Itou discloses that a resin mold (14; paragraph 0007) is formed to cover the parts from the outside (figure 1).

7. Claims 1, 9, 10, 12, 14, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,614,103 to Durocher et al.

Regarding claims 1, 9, 14, and 17, Durocher discloses a LED comprising: a cup (34); a plurality of electrical traces (37) formed on a surface of the resin cup using an MID means (the cup is made of 3-dimensional molded resin with embedded conductive traces, which makes it an MID structure; see column 3, lines 35-67); a LED chip (59) mounted at the bottom of the cup component (figure 8) and electrically connected to at least a first and second electrical conducting trace (figure 8); and a first connection part (49, 47) connected to the first and second conducting traces for providing electrical connections to external circuitry.

Regarding claim 10, Durocher discloses that the first connection part comprises at least a portion of the first and second leads (figure 11).

Regarding claim 12, Durocher discloses a plurality of LED chips mounted on the cup component (figure 11; 3 chips are mounted on the cup component 31), each having a first and second electrode (figures 10 and 11), and 3 or more conducting traces for providing electrical connection to the first and second electrodes (figure 11).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itou et al. in view of U.S. Patent No. 5,914,501 to Antle et al.

Itou fails to disclose other electrical components on the surface of the cup and electrically connected to the traces, the other components including a protective element that electrically protects the LED chip.

Antle discloses an LED chip (14) also having a protective element (12) provided in the cup (21), wherein the terminals of the protective element are respectively connected to the two terminals of the LED chip (see figures 2 and 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LED assembly of Itou, such that it includes a protective element, as taught by Antle. The rationale is as follows: One of ordinary skill in the art at the time the invention was made would have been motivated to provide a protective element in the cup, because doing so protects the LED from electrostatic discharge by clamping the applied voltage, thus preventing the LED from being damaged or destroyed by ESD (see Antle, column 1, lines 5-67). A person having ordinary skill would further have specified that the protection element be connected to the first and second conducting traces of Itou, because Antle shows that in order for the protection element to function, it must be connected in parallel to the LED chip (Antle, column 1, lines 25-35). Since the terminals of the LED chip are respectively connected to the first and second traces, then the terminals of the protection element must similarly be respectively connected to the first and second traces.

Art Unit: 2813

10. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itou et al. in view of U.S. Patent No. 5,564,819 to Yamaguchi.

Itou fails to disclose a plurality of LED chips mounted on the cup, with three or more electrical traces and three or more leads corresponding to the traces.

Yamaguchi discloses an LED structure having two LED chips mounted in the same cup (figures 1 and 5), with each chip having top and bottom electrodes. Yamaguchi further discloses three leads, and wirebonds corresponding to the leads.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the structure of Itou, such that a second LED chip, a third trace, and a third lead are provided, as suggested by Yamaguchi. The rationale is as follows: One of ordinary skill in the art at the time the invention was made would have been motivated to provide a second LED chip in the assembly, because doing so enables a single LED device to emit different colors (see Yamaguchi, column 1, lines 35-55). A person having ordinary skill in the art would then decide to use at least three leads and three traces in the multi-LED version of the device of Itou, because using three leads allows for independent operation of the two LED chips, rather than forcing both LEDs to emit simultaneously and at the same voltage. Since the traces are used to connect the LED chips to the leads, there must be at least three traces in order to allow for the independent connection of the LED electrodes to the three leads.

Allowable Subject Matter

11. Claims 4 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for indicating allowable subject matter is that there is no suggestion in the prior art to include elements that monitor light emission or heat generation directly on the reflecting cup of the LED. Considering the tight size tolerances for such LED devices, it is the examiner's opinion that a person having ordinary skill in the art would be motivated to keep light emission or heat generation sensors separate from and external to the device, as is typical in the prior art, rather than fabricating such sensors in a small chip, and then incorporating them into the package. The closest suggestion of a heat generation monitor in the prior art MID-structure LED devices is in U.S. Patent No. 6,614,103 to Durocher et al., which teaches the use of a heat sink element in each LED device. The examiner considers this to be distinct from the heat generation monitor claimed in the present application, because the heat sink of Durocher simply removes heat from the LED without in any way measuring or checking the level of heat generation in the LED.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2813

- a. U.S. Patent No. 6,313,525 to Sasano discloses an MID device having a cup shaped portion and a light-emitting device located at the bottom of the cup.
- b. U.S. Patent No. 6,331,063 to Kamada et al. discloses an LED array formed on a common MID substrate

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (703) 305-3233. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (703) 308-4940. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jennifer M. Dolan
Examiner
Art Unit 2813

jmd


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800